Omnitron Systems
Technology, Inc.

iConverter®
19-Module Power Chassis

User Manual

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Warning

The operating description in this Instruction Manual is for use by qualified personnel only. To avoid electrical shock, do not perform any servicing of this unit other than that contained in the operating instructions, unless you are qualified and certified to do so by Omnitron Systems Technology, Inc.

Caution

All user-required operations can be performed without opening the unit. Never attempt to open or remove the cover or tamper with the unit. There are no user replaceable or serviceable parts in this unit. Equipment is not intended to be installed and used in a place (home, school, or public area) accessible to the general population.

Warranty

This product is warranted to the original purchaser against defects in material and workmanship for a period of TWO YEARS from the date of shipment. A LIFETIME warranty may be obtained by the original purchaser by REGISTERING this product with Omnitron within 90 days from the date of shipment. TO REGISTER, COMPLETE AND MAIL OR FAX THE ENCLOSED REGISTRATION FORM. Or you may register your product on the Internet at http://www.omnitron-systems.com. During the warranty period, Omnitron will, at its option, repair or replace a product which is proven to be defective.

For warranty service, the product must be sent to an Omnitron designated facility, at Buyer's expense. Omnitron will pay the shipping charge to return the product to Buyer's designated US address using Omnitron's standard shipping method.

Limitation of Warranty

The foregoing warranty shall not apply to defects resulting from improper or inadequate use and/or maintenance of the equipment by Buyer, Buyer-supplied equipment, Buyer-supplied interfacing, unauthorized modifications or tampering with equipment (including removal of equipment cover by personnel not specifically authorized and certified by Omnitron), or misuse, or operating outside the environmental specification of the product (including but not limited to voltage, ambient temperature, radiation, unusual dust, etc.), or improper site preparation or maintenance.

No other warranty is expressed or implied. Omnitron specifically disclaims the implied warranties of merchantability and fitness for any particular purpose.

Exclusive Remedies

The remedies provided herein are the Buyer's sole and exclusive remedies. Omnitron shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any legal theory.

iConverter
19-Module Power Chassis
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1. 0 GENERAL DESCRIPTION

The *iConverter* 2U (3.5 inch) 19-Module Power Chassis is powered by up to three (3) hot-swappable and redundant universal AC or DC power supplies and can accommodate up to nineteen *iConverter* media converters. It is ideal for enterprise Local Area Network (LAN) or Metropolitan Area Network (MAN) applications where managed media converters with high density and a small rack-footprint (2U) are important.

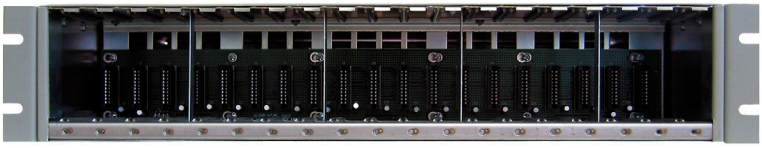

Fig. 1 19-Module Chassis (Shown without modules installed)

This User Manual describes the following models:

iConverter 19-Module Chassis Options					
Configuration	**19-Module AC 60 watts (100-240VAC)**	**19-Module AC 120 watts (100-240VAC)**	**19-Module DC 66 watts (36-60VDC)**	**19-Module DC 120 watts (36-60VDC)**	**19-Module DC 66 watts (18-36VDC)**
One (1) Power Supply	8200-1	8201-1	8205-1	8207-1	8206-1
Two (2) Power Supply	8200-2	8201-2	8205-2	8207-2	8206-2
Three (3) Power Supply	8200-3	8201-3	8205-3	8207-3	8206-3
Spare Power Supply	8200-9	8201-9	8205-9	8207-9	8206-9
23" Rack Mounting Kit	8091-2	8091-2	8091-2	8091-2	8091-2
For Wide Temperature (-40 to 60° C) chassis, add a "W" to the end of the part number. Consult factory for extended temperature (-40 to 75° C).					

1.1 Terms

Backplane A printed circuit board which is permanently mounted inside the chassis and is populated with receptacle connectors into which modules are inserted.

Module An *iConverter* plug-in card positioned into a slot location and inserted into a backplane connector.

Module-Guide A mechanical channel, guiding module insertion into a backplane connector.

Slot A single chassis position consisting of a backplane connector and its associated module-guides.

A Link A backplane slot-to-slot connection that provides Ethernet connectivity between adjacent slots (sometimes referred to as A Backplane Link).

A Port An interface on a module capable of Ethernet traffic via the backplane's A Link.

B Link A backplane slot-to-slot connection that provides Ethernet connectivity between adjacent slots (sometimes referred to as B Backplane Link).

B Port An interface on a module capable of Ethernet traffic via the backplane's B Link.

1.2 Mechanical Description

The 19-Module chassis consists of any combination of one to three AC or DC power supplies. As can be seen from the model table on the previous page, the 19-Module chassis models have been pre-configured with one, two and three power supplies. Any other combination of AC and DC power supplies are permitted. The power supplies provide power to the chassis' 19 backplane connectors.

1.3 Backplane Architecture

The chassis features 19 module slots numbered 1 (left-most positioned slot) through 19 (right-most positioned slot). As modules are inserted into the chassis slots, they are seated into the slot connectors.

The A and B Links provide Ethernet connectivity between adjacent slots.

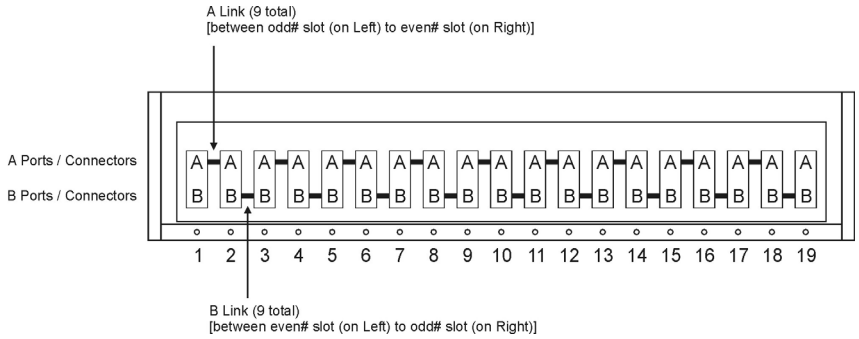
A Link (9 total)
[between odd# slot (on Left) to even# slot (on Right)]
A Ports / Connectors
B Ports / Connectors
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
B Link (9 total)
[between even# slot (on Left) to odd# slot (on Right)]

Fig. 2 19-Module Backplane Architecture

Fig. 2 depicts the chassis' backplane architecture including the A and B Links.

The A Links connect between odd numbered slots on the left to even numbered slots on the right (i.e. 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16, 17-18).

The B Links connect between even numbered slots on the left to odd numbered slots on the right (i.e. 2-3, 4-5, 6-7, 8-9, 10-11, 12-13, 14-15, 16-17, 18-19).

When modules with A and B Port capabilities are inserted into adjacent chassis slots, they can connect to each other via the backplane links and create flexible network architectures that meet the user's requirements.

NOTE: Not all modules support and have backplane ports. To find out about each specific module's backplane port configuration, refer to the specific module's documentation.

This chassis architecture facilitates a variety of applications including unmanaged, out-of-band managed, in-band managed and multi-port configurations.

1.4 Application Example

Fig. 3 depicts an out-of-band managed 10/100 converter application. In this application which is typical for a Central Office (CO) or a network core, a 19-Module chassis is loaded with 10/100 UTP to fiber converters that convert UTP cabling originating at a core switch to fiber and distributing the fiber in a star configuration to different customers.

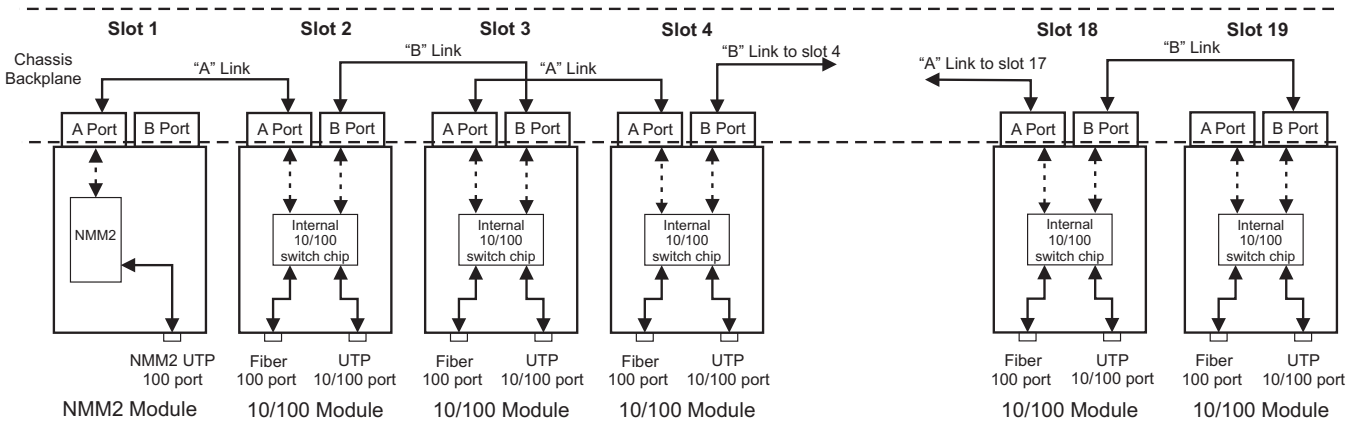

Fig. 3 Out-of-Band Managed 10/100Mbps Converter Application

Out-of-band management is desirable in this application since it facilitates secure monitoring, configuration and trap notification of a large number of converter modules in the chassis.

This application uses eighteen 10/100 modules for UTP to fiber conversion and a Network Management Module (NMM2) for management. All modules are plugged into the 19-Module chassis.

The 10/100 converter module is designed as a 4-port switch with two Ethernet front panel ports (100BASE-FX fiber and 10/100BASE-T/TX UTP) and two 10/100 Ethernet backplane ports (A and B Ports). In this application, the A and B Ports are disabled to provide isolation between the modules.

The NMM2 features a 100Mbps Ethernet A Port. In this application, its A port is disabled and connectivity to the management network is performed via the front panel Ethernet port on the NMM2.

It is important to emphasize that in this type of application, the A and B Ports of all of the 10/100 converters must be disabled to facilitate user data privacy by isolating the converters from each other and from the A and B Links.

It should also be noted that in this configuration, in addition to data privacy infringement, enabling the A and B Links will cause a broadcast storm (since the modules create closed loops through the switch) or partitioning of some of the data paths by the switch.

The management data flows between the NMM2 front panel (out-of-band) and the network management hardware.

This configuration provides the network administrator with the ability to provide multi-customer service using a single chassis which is securely managed.

2.0 UNPACKING, VISUAL INSPECTION AND INVENTORY

Review the contents. The following items should be included:

- ☐ *iConverter* 19-Module Power Chassis
- ☐ 2 Rack mounting “L” brackets and 12 screws
- ☐ 1, 2 or 3 power supplies depending on the model ordered:
  8200-x or 8201-x (AC) / 8205-x or 8207-x (48VDC) / 8206-x (24VDC)
  ‘x’ indicates the number of power supplies installed
- ☐ One power cord for each AC Power supply
- ☐ User Manual

Inspect equipment and immediately report any damage or discrepancies to Omnitron at 949-250-6510. If equipment is damaged, do not apply power to the equipment.

3.0 SITE PREPARATION AND INSTALLATION

3.1 Rack Mounting and Grounding the Chassis

Prepare the chassis for proper grounding to the office equipment.

The chassis is suitable for installation as part of the Common Bonding Network (CBN) per GR-1089-CORE, Issue 4 (sec 9.3).

- ☐ Verify the rack is properly grounded to Earth ground per Figure 4.

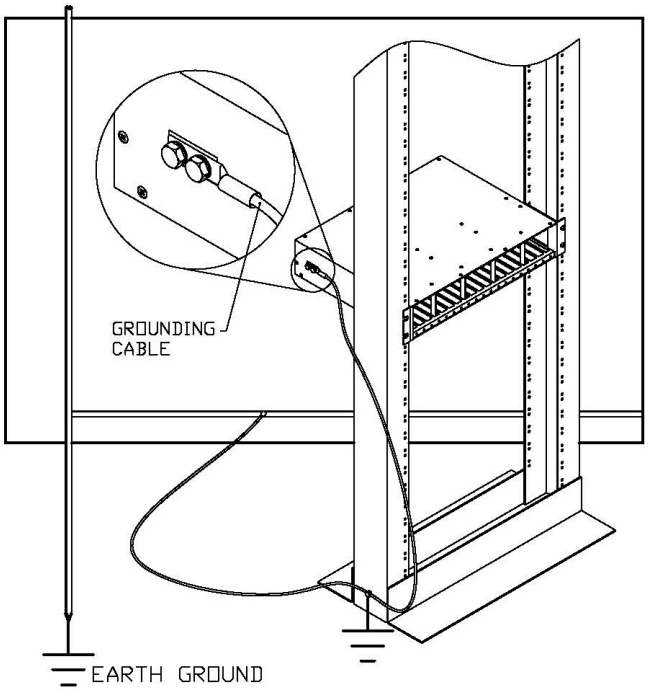

Fig. 4 Office Equipment Grounding

- ☐ When rack mounting the chassis to a 19” standard rack, first attach the two enclosed “L” shaped rack mounting brackets to the chassis using the enclosed screws.
- ☐ Mount and attach the chassis (after the mounting brackets are installed) to the rack using the appropriate rack mounting screws (not provided).
- ☐ Clean and remove any paint and other nonconductive coatings from the chassis ground point and grounding lug surfaces. Apply the appropriate antioxidant compound to the conductors.

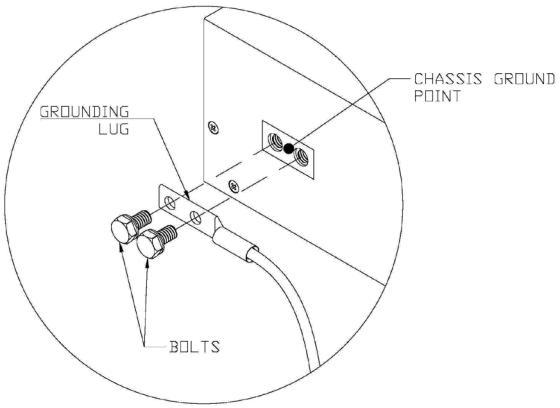

Fig. 5 Attaching Grounding Lug to Chassis

- ☐ Attach one end of the ground cable to the chassis ground point using the appropriate bolts and dual-hole grounding lug connector (not provided). See Figure 5.
- ☐ Attach the other end of the ground cable to the office equipment using a dual-hole grounding lug connector according to the office equipment specifications.
- ☐ The standard operating temperature of this equipment is 0 to 50 degrees C. If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack must not exceed the maximum rated 50 degrees C temperature.
- ☐ Installation of the equipment should be such that the air flow in the front and back of the unit is not compromised or restricted.
- ☐ Installing this equipment into a rack in such a way as to make it unstable **may cause injury or death**. Always make sure that the rack you are installing this equipment into is properly secured, stable, balanced and designed to carry the weight and weight distribution of this equipment.
- ☐ Never use this equipment to carry any weight except its own. Never use it as a shelf to support the weight of other equipment.

3.2 AC Powered Chassis Preparation and Cabling

- ☐ Power source should be available within 5 ft. of the chassis and installed per the National Electrical Code, ANSI/NFPA-70.
- ☐ The 8200 AC power supply requires 100-240VAC, 2.0 Amps, 50/60Hz. Appropriate overloading protection should be provided on all AC power source outlets utilized. The 8201 AC power supply requires 100-240VAC, 2.5 Amps, 50/60Hz. Appropriate overloading protection should be provided on all AC power source outlets utilized.
- ☐ Attach the AC power cords (provided for each Power Supply) to the back of each Power Supply and plug into the AC outlets. The fans should immediately begin to run and any installed *iConverter* modules will illuminate the power LED.

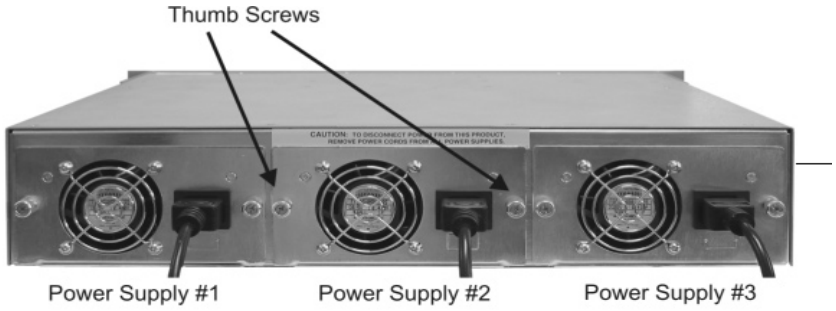

Fig. 6 19-Module Chassis with three Installed AC Power Supplies

3.3 DC Powered Chassis Preparation and Cabling

- ☐ Power source should be available within 5 ft. of the chassis. The over current protection for the connection with centralized DC shall be provided in the building installation and shall be a UL listed breaker rated at 20 Amps, and installed per the National Electrical Code, ANSI/NFPA-70.
- ☐ The 8205-1, 8205-2 and 8205-3 require 36-60VDC/3.0 Amps power and the 8207-1, 8207-2 and 8207-3 require 36-60VDC/5.0 Amps power. The 8206-1, 8206-2 and 8206-3 require 18-36VDC/6.0 Amps power. Appropriate overloading protection should be provided on all DC power source outlets utilized.

NOTE: The DC power battery return (BR) terminal or positive terminal must be grounded at the source end (power feed or DC mains power end). The DC power BR input terminal is not connected to the equipment frame (chassis), so it is configured as DC-I according to the GR-1089-CORE, Issue 4 (sec 9.8.3) definitions.

WARNING: Only a DC power source that complies with safety extra low voltage (SELV) requirements can be connected to the DC-input power supply.

WARNING REGARDING EARTHING GROUND:

- This equipment shall be connected to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode is connected.
- This equipment shall be located in the same immediate area (such as adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system shall not be earthed elsewhere.
- The DC supply source is to be located within the same premises as this equipment.
- There shall be no switching or disconnecting devices in the earthed circuit conductor between the DC source and the earthing electrode conductor.

- ☐ Locate the DC circuit breaker and switch the circuit breaker to the OFF position.
- ☐ Prepare a power cable using a three conductor insulated wire (not supplied) with a 14 AWG gauge. Cut the power cable to the length required.
- ☐ Strip approximately 3/8 of an inch of insulation from the power cable wires.
- ☐ Connect the power cables to the *iConverter* Chassis by fastening the stripped ends to the DC power connector.

  WARNING: Note the wire colors used in making the positive, negative and ground connections. Use the same color assignment for the connection at the circuit breaker.
- ☐ Connect the power wires to the circuit breaker and switch the circuit breaker ON.

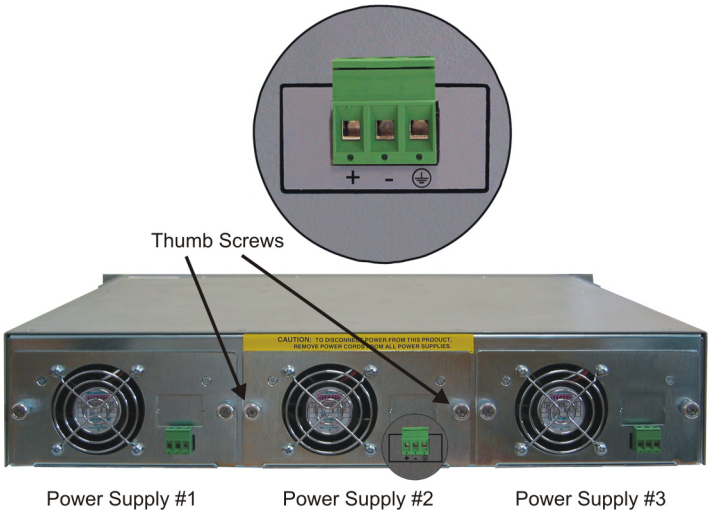

Fig. 7 19-Module Chassis with three Installed DC Power Supplies

4.0 POWER SUPPLY REPLACEMENT

CAUTION: To remove power from the chassis, remove power cord from all power supplies.

WARNING!!!

NEVER ATTEMPT TO OPEN THE CHASSIS OR SERVICE THE POWER SUPPLY OR FAN MODULE. OPENING THE CHASSIS MAY CAUSE SERIOUS INJURY OR DEATH.
THERE ARE NO USER REPLACEABLE OR SERVICEABLE PARTS IN THIS UNIT.

The power supplies are hot swappable and can be replaced without shutting the chassis down. However, when removing and replacing a power supply unit, the following steps must be strictly followed in order to prevent serious injury or death or serious damage to your equipment. Removal of power supplies or cards will result in access to hazardous electricity.

4.1 Hot Removal of AC Power Supply

- ☐ Determine which power supply is faulty by observing the status LEDs on the *iConverter* NMM2 or viewing the status from the network management software.
- ☐ Power Supply 1 (PS1) refers to the power supply on the right (as viewed from the front). Power Supply 2 (PS2) refers to the power supply in the middle. Power Supply 3 (PS3) refers to the power supply on the left (as viewed from the front).
- ☐ LED being ON indicates that the power supply is supplying power. LED being OFF indicates that the power supply is not present. Blinking LED indicates that a power supply is installed but does not supply power because it is not properly connected to a power source or because it is faulty.
- ☐ Once you determine that your AC plug is connected properly to an AC wall outlet, and the power supply LED is still not ON, determine which is the failing power supply unit and proceed to the next step.
- ☐ Remove the AC power cord of the faulty power supply from the wall outlet.
- ☐ Remove the AC power cord of the faulty power supply from the power supply unit.
- ☐ Using a screwdriver, loosen the 2 thumb screws securing the power supply to the main chassis (refer to Fig 6.).
- ☐ Remove the failing power supply.

4.2 Hot Attachment of AC Power Supply

- ☐ Unpack the power supply carefully. Inspect for any damage. If any damage is observed, do not use the power supply and call 949-250-6510 to report the damage immediately and request a replacement unit.
- ☐ Align the guide rails on the chassis with the rails on the bottom of the power supply; Slide the power supply in, ensuring that the power supply is seated firmly against the backplane and tighten the thumb screws securely with a screwdriver.
- ☐ Plug the AC cord to the back of the power supply.
- ☐ Plug the AC cord to the AC wall outlet.
- ☐ Watch and listen to the fan in the rear of the power supply to ensure it is powered.
- ☐ Save the packing material of the new power supply for return shipment of the faulty power supply or for future reuse.

4.3 Hot Removal of DC Power Supply

- ☐ Determine which power supply is faulty by observing the status of the LEDs in the *iConverter* NMM2 or viewing the status from the network management software.
- ☐ Power Supply 1 (PS1) refers to the power supply on the right (as viewed from the front). Power Supply 2 (PS2) refers to the power supply in the middle. Power Supply 3 (PS3) refers to the power supply on the left (as viewed from the front).
- ☐ LED being ON indicates that the power supply supplies power. LED being OFF indicates that the power supply is not present. Blinking LED indicates that a power supply is installed but does not supply power because it is not properly connected to a power source or because it is faulty.
- ☐ Once you determine that your DC source is connected properly, and the power supply LED is still not ON, determine which is the failing power supply unit and proceed to the next step.
- ☐ Locate the DC circuit breaker, and switch the circuit breaker to the OFF position.
- ☐ Remove the DC power cables of the faulty power supply from the *iConverter* power supply unit.
- ☐ Using a screwdriver, loosen the 2 thumb screws securing the power supply to the main chassis (refer to Fig. 7).
- ☐ Remove the failing power supply.

4.4 Hot Attachment of DC Power Supply

- ☐ Unpack the power supply carefully. Inspect for any damage. If any damage is observed, do not use the power supply and call 949-250-6510 to report the damage immediately and request a replacement unit.
- ☐ Align the guide rails on the chassis with the rails on the bottom of the power supply; slide in the power supply ensuring that

the power supply is seated firmly against the backplane and tighten the thumb screws securely with a screwdriver.

- ☐ Locate the DC circuit breaker and make sure that the switch is in the OFF position.
- ☐ Reconnect the DC power source to the *iConverter* power supply.
- ☐ Locate the DC circuit breaker and switch the circuit breaker to the ON position.
- ☐ Watch and listen to the fan in the rear of the power supply to ensure it is powered.
- ☐ Save the packing material of the new power supply for return shipment of the faulty power supply or for future reuse.

5.0 SPECIFICATIONS

Chassis Type	19-Module AC	19-Module AC	19-Module 24VDC	19-Module 48VDC	19-Module 48VDC
Model Number	8200-x	8201-x	8206-x	8205-x	8207-x
Module Capacity	19				
Power Supply Capacity	1 - 3 Power Supplies				
Power Requirements (typical)	60 watts 100 to 240VAC 50/60Hz 2.0A @ 100VAC 18A @ 3.3VDC	120 watts 100 to 240VAC 50/60Hz 2.5A @ 100VAC 36A @ 3.3VDC	66 watts +/- 18 to 36VDC 2.0A @ 100VAC 18A @ 3.3VDC	66 watts +/- 36 to 60VDC 3.0A @ 100VAC 20A @ 3.3VDC	120 watts +/- 36 to 60VDC 5.0A @ 100VAC 36A @ 3.3VDC
Dimensions	W: 17.15” x D: 14.0” x H: 3.5”				
Weight	16 lbs (820x-1) 18 lbs (820x-2) 21 lbs (820x-3)				
Compliance	UL, CE, FCC Class A, NEBS Level 3				
Temperature	Standard: 0 to 50° C Wide: -40 to 60° C Storage: -40 to 80° C				
Humidity	5 to 95% (non-condensing)				
Altitude	-100m to 4,000m				
MTBF (hrs)	1 Power Supply: 45,700 2 Power Supplies: 182,000 3 Power Supplies: 731,000				

6.0 CUSTOMER SUPPORT INFORMATION

If you encounter problems in installing this product, contact Omnitron Technical Support:

Phone: (949) 250-6510
Fax: (949) 250-6514

Address: Omnitron Systems Technology, Inc.
140 Technology Drive, #500
Irvine, CA 92618, USA

Email: support@omnitron-systems.com
URL: http://www.omnitron-systems.com